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Statistical Bulletin

METROPOLITAN LIFE INSURANCE COMPANY

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A Century of Medical Progress

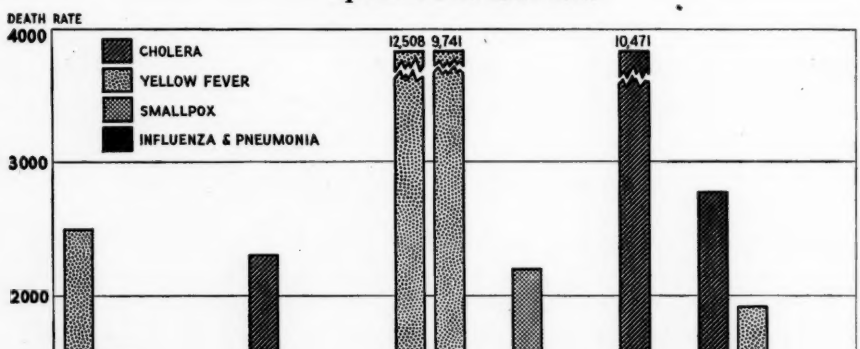
THE American Medical Association at its annual meeting this June celebrates the 100th anniversary of its founding. During this momentous century medical and sanitary science has made amazing progress in conserving the lives and safeguarding the health of the people. Not the least of the blessings flowing out of the marked reduction in death and disability are the social and economic benefits of fewer broken families, fewer orphans, longer life with much increased production. Physicians and their colleagues in related fields have made a great contribution not only to our health and happiness, but also to our national progress.

A century ago, and even more recently, the prevailing mortality from all causes combined was about two or three times what it is at present. According to modern standards, the death rates from some of the infectious diseases were incredibly high. It was not unusual, for example, for the death rates from typhoid fever and from diphtheria to exceed 100 per 100,000 population; at present, there are cities which have not had a single death from either of these diseases in years. The death rate from tuberculosis in many areas was well above 300 per 100,000; today, there are 10 States with rates under 25 per 100,000. Especially heavy was the loss of life in infancy and early childhood, nearly half the total number of deaths occurring under age 5.

Our forefathers were subject not only to a generally high death rate year after year, but also to the periodic ravages of cholera, yellow fever, smallpox, and a number of other diseases. Owing to the undeveloped state of vital statistics in the United States prior to the present century, there are no nationwide data to give an over-all picture of the havoc wrought by these early epidemics. However, figures are available for several of our larger cities such as New York, Chicago, Philadelphia, and New Orleans. The chart on page 2 shows the almost unbelievable heights to which the death rates from some of the infectious diseases rose during epidemic years. As a basis of comparison, the chart shows also the mortality for the severest epidemic in the past half century—the influenza-pneumonia epidemic of 1918-1919.

It will be noted that the most

Death Rates per 100,000 from Specified Diseases in Certain Epidemic Years. Compared with the Influenza-Pneumonia Epidemic of 1918-1919



DEATH RATES FROM TYPHOID FEVER AND FROM DIPHTHERIA IN SELECTED YEARS

CITY	DEATH RATE PER 100,000	
	In Specified Year	In 1944
TYPHOID FEVER		
Providence...	136.6 (1865)	0.4
Philadelphia..	124.7 (1865)	.2
Baltimore....	108.5 (1870)	.1
Lowell, Mass..	158.0 (1890)	0
Chicago.....	172.2 (1891)	.1
DIPHTHERIA		
New York....	281.0 (1875)	0.1
Boston.....	226.5 (1876)	.3
Providence...	356.1 (1877)	.8
Chicago.....	290.7 (1880)	.1
Baltimore....	260.5 (1881-82)	1.4

devastating epidemics in this country occurred before the middle of the 19th century. A yellow fever outbreak in Philadelphia in 1793 carried off more than one eighth of the entire population of the city; only five years later another epidemic of the disease took an additional one tenth of the inhabitants. As late as 1832 a cholera epidemic in New Orleans killed off more than one tenth of the people there.

The past half century, with the one exception noted (1918-1919) has been so free of major epidemics that we have little conception of the terrible ravages which our forebears suffered. The chances are remote indeed that the outbreaks of the past will ever recur. Many of the

diseases which in years past took a heavy toll of life have been altogether banished from the mortality records, while others have been reduced to very minor proportions.

The progress achieved in controlling the infections has necessarily shifted the emphasis in medical practice. As the American Medical Association begins its second century, the physician will be concerned more and more with the degenerative diseases rather than with the diseases of environmental origin, with the chronic diseases of later life rather than with the childhood infections, and with diseases of longer duration rather than with acute conditions. These changes bring with them a host of new and challenging problems. The medical profession of America will, as before, meet this challenge with ever-increasing effectiveness.

Health Problems of School-Age Children

TRULY phenomenal have been the accomplishments of the past few decades in reducing the mortality and in improving the general health of children at the school ages. For example, in 1900 the death rate in the United States among children 5 to 14 years of age was 3.9 per 1,000; at present it is at the remarkably low level of less than 0.9 per 1,000. This means that for every child who dies under current mortality conditions, four would have died if the conditions at the beginning of the century had continued to prevail. Yet, even the present low death rate can be further reduced.

This is clearly evident from a review of the leading causes of death among children of school age. The table on page 4 gives a list of these causes, in order of numerical importance, for the millions of boys and girls between 5 and 14 years of age insured in the Industrial Department of the Metropolitan Life Insurance Company. Accidents outrank all other causes of death by a wide margin. Among boys at the school ages, accidents account for four out of every 10 deaths. At 5 to 9 years, accidents among boys cause seven times as many deaths as the next ranking cause. Even among girls in this age group, accident fatalities outnumber the second cause of death in the ratio of 2½ to 1. Accidents are largely preventable, and much is still to be done to reduce the hazards which bring about such shocking waste of child life.

Among the diseases, rheumatic fever stands at the head of the list of causes of death among children 5 to 14 years. Even so, the deaths from this disease in childhood are only a fraction of the toll of human life that the affliction takes. Rheumatic fever of childhood origin is responsible also for a major part of the mortality from heart disease in the early and middle adult years. Fortunately, considerable progress has already been made in reducing the ravages of rheumatic fever. It is

likewise encouraging that research on various phases of the disease has been stimulated and intensified in recent years. Although the cause of rheumatic fever is yet to be definitely established, the early detection and the more adequate treatment of cases will undoubtedly further reduce the toll of death and disability which it inflicts both on children and adults.

Even more favorable are the prospects for continued progress in controlling the other major causes of death among children—pneumonia, appendicitis, tuberculosis, and the principal communicable diseases of childhood. A large proportion of the deaths from each of these causes is due, not to the lack of effective methods of treatment, but to delay in seeking treatment until the disease or condition has reached a serious stage. In this phase of the life conservation effort, parents have a large and direct responsibility.

LEADING CAUSES OF DEATH AMONG SCHOOL-AGE CHILDREN, BY SEX. METROPOLITAN LIFE INSURANCE COMPANY. WEEKLY PREMIUM-PAYING INDUSTRIAL BUSINESS. 1945–1946

BOYS			GIRLS		
CAUSE OF DEATH	AVERAGE DEATH RATE PER 100,000	PERCENT OF TOTAL MORTALITY	CAUSE OF DEATH	AVERAGE DEATH RATE PER 100,000	PERCENT OF TOTAL MORTALITY
AGES 5 TO 9 YEARS					
ALL CAUSES	92.3	100.0	ALL CAUSES	67.3	100.0
Accidents	36.0	39.0	Accidents	16.3	24.3
Pneumonia	5.0	5.5	Rheumatic fever*	6.4	9.5
Rheumatic fever*	4.8	5.2	Communicable diseases of childhood†	5.2	7.8
Appendicitis	3.9	4.2	Pneumonia	4.8	7.1
Communicable diseases of childhood†	3.0	3.2	Tuberculosis	2.8	4.1
Tuberculosis	2.3	2.5	Appendicitis	2.2	3.3
AGES 10 TO 14 YEARS					
ALL CAUSES	81.3	100.0	ALL CAUSES	53.6	100.0
Accidents	34.5	42.4	Accidents	8.4	15.7
Rheumatic fever*	6.8	8.4	Rheumatic fever*	8.3	15.4
Pneumonia	3.3	4.0	Tuberculosis	5.6	10.4
Appendicitis	3.1	3.8	Pneumonia	2.8	5.3
Tuberculosis	2.8	3.4	Appendicitis	2.2	4.2
Communicable diseases of childhood†	1.5	1.9	Communicable diseases of childhood†	.9	1.8

*Includes chronic organic heart disease.
†Diphtheria, measles, scarlet fever, and whooping cough.

A number of the diseases which have come under control as causes of death are still important as causes of morbidity. This reflects the fact that, in general, far more has been accomplished in successfully treating than in preventing these diseases among children. Thus, the common communicable diseases of childhood and the respiratory diseases play a larger role among the causes of sickness than among the causes of mortality. The National Health Survey showed that at ages 5 to 9, of the illnesses which last a week or more, these common diseases of childhood account for more than half, and the acute respiratory diseases for slightly more than one fifth of the total, the two combined thus being responsible for about three fourths of the illnesses of fairly long duration. At ages 10 to 14, these two groups of diseases are each responsible for almost 30 percent of the total. Accidents and chronic conditions, on the other hand, are of less consequence in the morbidity than in the mortality record.

As the causes of death and disability are being reduced, more and more attention needs to be focused on other important factors in child health such as nutrition, dental defects, mental health, and visual and hearing disorders. Teachers, because of their daily contact with the children, are in a particularly advantageous position to aid in advancing these phases of the child health program. Well-motivated education in the school program can go a long way toward helping the children to take responsibility for their health. In addition, the teacher can detect the more obvious cases of ill health, so that the necessary corrective measures can be instituted as early as possible. Such health education and the proper use of the teacher's observations can help to improve the health and nutrition of children.

The condition of the teeth of our children is still shockingly bad. Surveys show that more than 95 percent of the children reaching age 15 have already experienced some decay in their permanent teeth. It is estimated, moreover, that the fillings necessitated by dental decay are being made at only about one sixth the rate at which the defects arise. Under these circumstances, greatly expanded facilities and increased personnel are required to deal with the problem of child dental health. Health departments, dental societies, and school administrators should work together to plan for the development of the needed local facilities. In smaller towns and rural areas, mobile dental units can be utilized. On the positive side, much more can be done through instruction in dental hygiene and improved nutrition. There is also some promise for reducing the frequency of dental decay either by addition of small amounts of fluorine to community water supplies, or by topical application of sodium fluoride to the teeth of children.

The mental health of the child, until fairly recent years, was an almost completely untilled field of study. Fortunately, increasing at-

tention is being given to the mental and emotional adjustment of children. The home environment is necessarily the most important factor in mental hygiene, but the school, the community environment, and the physical health of the child are also of vital importance. Field surveys indicate that there are large numbers of children who would benefit greatly from psychiatric treatment, and that facilities for treating such children are either simply nonexistent or wholly inadequate.

Altogether, there is still room for further improvement in every phase of child health. There are still many baffling problems, but even within the framework of existing knowledge there is much that can be done to make our children healthier, physically and mentally. The effort is eminently worth while, for the child of today is the citizen of tomorrow, and a healthy people make for a strong country.

War and Postwar Harvest of Babies

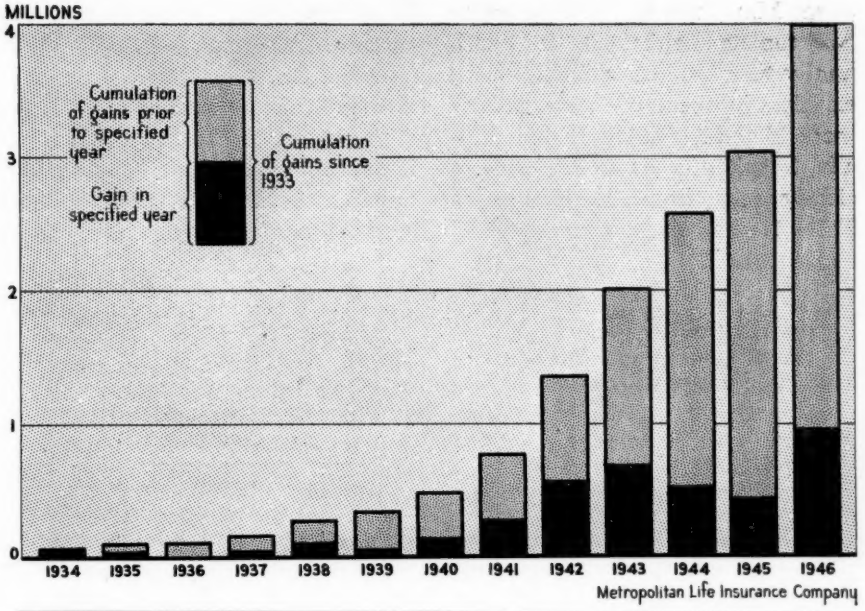
ECONOMIC recovery, war-induced prosperity, and special psychological factors attending the induction and release of men from the armed forces, have contributed to raise the national birth rate 36 percent above the low point registered in 1933. The rate in 1946—24.8 per 1,000 population (after adjustment for unregistered births)—was the highest for the country since the early 1920's; the corresponding rate in 1933 was 18.3 per 1,000. The upswing in the birth rate during this 13-year period has yielded a total of 4,000,000 more babies than would have been born had the rate remained at the 1933 level.

The year by year increments to this total are shown graphically in the chart on page 7. These increments are derived from a comparison of the number of births occurring each year with the number which would have been expected if the 1933 rates of reproduction by age of mother had continued.

The years immediately following 1933 and prior to the outbreak of World War II saw only small rises in the birth rate. Thus, the gains in the six years 1934-1939 together brought only 350,000 more babies than if conditions of 1933 had continued unchanged. However, with the accelerated tempo of industrial activity and the sharp increase in the marriage rate after 1939, the birth rate rose rapidly, reaching a wartime high in 1943. In that year alone, the excess amounted to 691,000 babies.

Although the birth rate fell off somewhat in 1944 and 1945—primarily as a consequence of extensive overseas movement of our armed forces—these two years together produced almost one million babies over and above the number which the birth rate of 1933 would have provided. Concurrently with the rapid demobilization of our Army and Navy soon after V-J Day, the number of births increased rapidly

Additional Babies Born Because of Rise in Birth Rate in the United States Since 1933



up through 1946, resulting in an all-time record of 3,440,000 babies in that year. This represented a gain of approximately 1,000,000 babies in 1946, as compared with the experience of 1933, the excess being not far from one-half year's crop of new infants in the prewar period.

The outstanding record for 1946 was due, in large measure, to the spectacular rise in births during the second half of the year. It is estimated that the number of births reported in the first six months averaged a little more than 225,000 a month. Then in July the number suddenly jumped to 284,000 and continued to increase, until it reached a peak of 343,000 in December. In the latter month the provisional birth rate, on an annual basis, was as high as 29.5 per 1,000 population.

According to reports for the first quarter of the current year, it appears that the birth rate in 1947 will be as favorable as in 1946. However, the level of recent months can hardly be maintained for any length of time. This postwar boom in babies has come about largely through the concentration, within this short period, of births which were postponed because fathers had been in service overseas, and of births anticipating events that ordinarily would have taken place in subsequent years. The marriage rate already shows signs of returning to a more normal level, and the birth rate is bound to follow. However, the prospect of a return to the low birth rates of the depression years seems remote.

The Dionne Quintuplets Reach the Teen Ages

ON MAY 28th the Dionne quintuplets celebrated the 13th anniversary of their birth, with excellent prospects of enjoying many more birthdays not only individually but jointly as well. This is clearly seen from the figures in Table 1. The chances are about 95 in 100 that all five girls will reach their majority, about 65 in 100 that they will all attain age 45, and more than 20 in 100 that they will all five live to celebrate their 65th birthday. According to current mortality conditions, it may be expected that the last survivor of the group will live to age 86.

TABLE 1—CHANCES IN 100 THAT FIVE FEMALE LIVES AT AGE 13 WILL SURVIVE JOINTLY TO LATER AGES ACCORDING TO MORTALITY IN CANADA, 1940–1942

SURVIVAL TO AGE	CHANCES IN 100
15	98.9
20	95.4
25	90.7
30	85.3
35	79.6
40	73.0
45	65.6
50	56.8
55	46.2
60	33.9
65	21.3

The figures just cited are based on the average for girls in the general population of Canada, and it is quite probable that, with the special care that the world-famous quintuplets are receiving, they will exceed the above averages. Furthermore, as continued progress is made in life conservation, their chances of survival will further increase.

In fact, within the short period of 13 years since the birth of the quintuplets, considerable progress has been made in extending the average length of life. The supporting evidence for this statement is found in the data in Table 2. Unfortunately, Canadian life tables are not available for 1934, the year of birth of the girls, nor for the present year, but the years for which life tables are available—1929-1931 and 1940-1942—give a good approximation of the facts. The joint expectation of life at birth—*i.e.*, the prospective after-lifetime of the five girls *together*—

TABLE 2—JOINT EXPECTATION OF LIFE FOR FIVE FEMALE LIVES ACCORDING TO MORTALITY IN CANADA 1940–1942 AND 1929–1931

AGE	JOINT EXPECTATION		GAIN IN EXPECTATION (YEARS)
	1940–1942	1929–1931	
0	35.47	25.72	9.75
5	43.70	37.69	6.01
10	40.00	34.63	5.37
13	37.53	32.40	5.13
15	35.92	30.97	4.95
20	32.15	27.83	4.32
25	28.68	25.15	3.53
30	25.33	22.56	2.77
35	21.96	19.88	2.08
40	18.71	17.18	1.53
45	15.54	14.45	1.09
50	12.56	11.75	.81
55	9.84	9.20	.64
60	7.49	6.96	.53
65	5.44	5.10	.34

was 25¾ years according to the mortality as of 1929–1931; it was 35½ years according to the mortality of 1940–1942, a gain of 9¾ years. At age 13 the joint expectation of life according to the earlier mortality was close to 32½ years, whereas according to the latter mortality it was 37½ years—a gain of about 5 years. For purposes of comparison the improvement in the joint expectation of life is given in the table for quinquennial ages up to 65 years.

Changes in Methods of Suicide

ALTHOUGH there are many ways to commit suicide, the majority of those who die by their own hand use one of four methods—firearms, hanging, asphyxiation by gas, or poisoning. Among Industrial policyholders, who constitute a representative sample of the urban populations of the United States and Canada, these four means account for about four fifths of all the suicides in each sex.

The proportion of the four leading means of suicide, as a group, to the total, has remained practically unchanged in the past quarter century, but there have been some marked changes in the relative importance of the individual means. The statistical facts are shown in the table on page 10. Hanging, for example, has been steadily increasing in frequency as a means of self-destruction. Among white males in the period 1921-1925, hanging was used in 17 percent of the suicides; by 1946 the proportion had grown to about 28 percent. Among white females the corresponding rise has been from 9 percent of the total to about 25 percent, and hanging is now their leading mode of suicide.

On the other hand, poisoning has become much less frequent. Among white males, the relative frequency of this means has been reduced by one half in the quarter century under survey—from 14 percent in 1921-1925 to 7 percent in 1946. Among white women, poisoning has declined from about one third of the total to about one fifth. Thus poisoning, which in years past was the leading method of suicide by women, now ranks second. The trend for the other means are evident from the table on the following page.

The relative frequency with which the common methods of suicide are used differs considerably for the two sexes. Among white men, firearms have continued to be the most frequent means employed, accounting for about one third of all the suicides throughout the quarter century under survey. Hanging, in second place, is used in more than a quarter of the deaths; asphyxiation by gas follows in order with nearly one sixth of the total. These three methods together account for three quarters of all suicides in this group. Poisoning is in fourth place, far below the others. Among white females the methods in order of frequency are: hanging, poisoning, asphyxiation by

gas, and firearms. Although the last-mentioned means is relatively more common now than at any time in the past quarter century, it is still only one half as important among women as among men.

A point of special interest is that women are to an increasing extent choosing the more violent, and hence the more disfiguring, means of suicide. Thus, firearms and hanging, which in 1921-1925 were used in less than one quarter of the suicides among white women, accounted for fully two fifths of the total in 1946. At the same time, jumping from high places likewise increased materially in relative frequency. On the other hand, the more passive means of self-destruction among women, such as asphyxiation and poisoning, decreased from about 56 percent of the suicides in the earlier period to about 40 percent.

Just as there are varying trends in the methods of suicide, so there are variations in the suicide rate itself from one period to another. The frequency of suicide usually increases with unfavorable economic and psychological conditions. Thus, immediately following the close of the war, when employment opportunities were sharply reduced and when men released from the armed forces were faced with the problem of readjustment to civilian life, the suicide death rate showed a fairly marked rise. This upward trend, however, soon came to a halt and, in fact, shows indications of having been reversed.

MEANS EMPLOYED IN COMMITTING SUICIDE. WHITE PERSONS, BY SEX. ALL AGES METROPOLITAN LIFE INSURANCE COMPANY. WEEKLY PREMIUM-PAYING INDUSTRIAL BUSINESS, 1921 TO 1946

METHOD	PERCENT OF ALL SUICIDES							
	WHITE MALES				WHITE FEMALES			
	1946	1941–1945	1931–1935	1921–1925	1946	1941–1945	1931–1935	1921–1925
SUICIDE—TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Firearms	32.8	33.3	32.0	32.2	15.5	11.8	12.2	13.9
Hanging	27.6	25.7	21.7	17.1	24.6	18.9	12.2	9.4
Asphyxiation by gas	15.5	16.3	18.0	17.4	19.4	25.8	25.1	23.9
Poison (except gas)	7.0	6.7	12.2	14.4	20.4	22.1	33.0	32.5
Drowning	5.3	6.1	5.0	5.7	6.3	8.6	7.0	9.4
Cutting or piercing instruments	4.5	4.6	4.9	7.3	1.6	2.5	1.8	2.7
Jumping from high places	3.5	4.3	2.7	2.2	8.0	6.5	5.9	5.2
Crushing	1.5	1.3	1.0	1.0	1.4	1.1	.7	.7
All others	2.3	1.7	2.5	2.7	2.8	2.7	2.1	2.3

Comparative Data on the Causes of Death Among Industrial Policyholders

The following table shows the mortality among Industrial policyholders for April 1947 and April 1946, together with the death rates for the first four months of 1947, 1946, and 1945.

DEATH RATES* PER 100,000 POLICYHOLDERS FROM SELECTED CAUSES
WEEKLY PREMIUM-PAYING INDUSTRIAL BUSINESS
METROPOLITAN LIFE INSURANCE COMPANY

CAUSE OF DEATH	ANNUAL RATE PER 100,000 POLICYHOLDERS*				
	April 1947	April 1946	Year to Date: End of April		
			1947	1946	1945
ALL CAUSES—TOTAL	790.6	770.1	779.4	858.4	924.5
—Excluding war deaths	*789.6*	*751.9*	*778.4*	*831.4*	*793.8*
Typhoid fever	0.1	0.1	0.2	0.1	0.3
Measles	.2	1.9	.2	.7	.1
Scarlet fever	—	.2	.1	.2	.4
Whooping cough	.5	.4	.6	.8	1.0
Diphtheria	.6	.5	.7	.8	.8
Influenza	9.2	4.2	5.0	10.0	5.2
Pneumonia (all forms)	37.1	30.1	31.8	38.3	37.0
Tuberculosis (all forms)	32.0	37.2	34.7	40.4	37.8
Tuberculosis of respiratory system	29.3	33.5	31.8	36.9	34.3
Syphilis	8.1	8.2	8.7	8.9	9.2
Acute poliomyelitis	.1	.1	.4	.2	.3
Cancer (all forms)	116.8	108.2	119.6	116.4	113.5
Diabetes mellitus	26.7	26.0	27.0	31.5	27.4
Cerebral hemorrhage	75.3	70.9	73.9	75.4	71.2
Diseases of the coronary arteries and angina pectoris	76.0	69.8	81.0	76.8	71.8
Other chronic heart diseases†	185.0	167.1	178.3	190.6	174.3
Diarrhea and enteritis	3.4	2.3	2.9	2.5	3.2
Appendicitis	2.1	3.6	2.7	4.0	4.8
Chronic nephritis	42.6	42.3	44.6	48.6	48.5
Puerperal state—total	3.3	2.9	3.2	3.0	3.9
Suicides	6.9	7.0	6.7	7.6	5.9
Homicides	3.1	3.7	3.5	3.9	2.7
Accidents—total	41.5	48.2	42.4	52.2	54.8
Home accidents	10.1	7.9	11.6	12.5	11.2
Occupational accidents	5.5	3.7	4.9	4.5	5.4
Motor vehicle accidents	12.2	14.8	14.5	16.1	12.9
War deaths (enemy action)	1.0	18.2	1.0	27.0	130.7
All other causes of death	119.3	117.1	110.1	118.4	120.1

*The rates for 1947 and 1946 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†International List (1940) titles 92, 93 (c), (d), (e), and 95.

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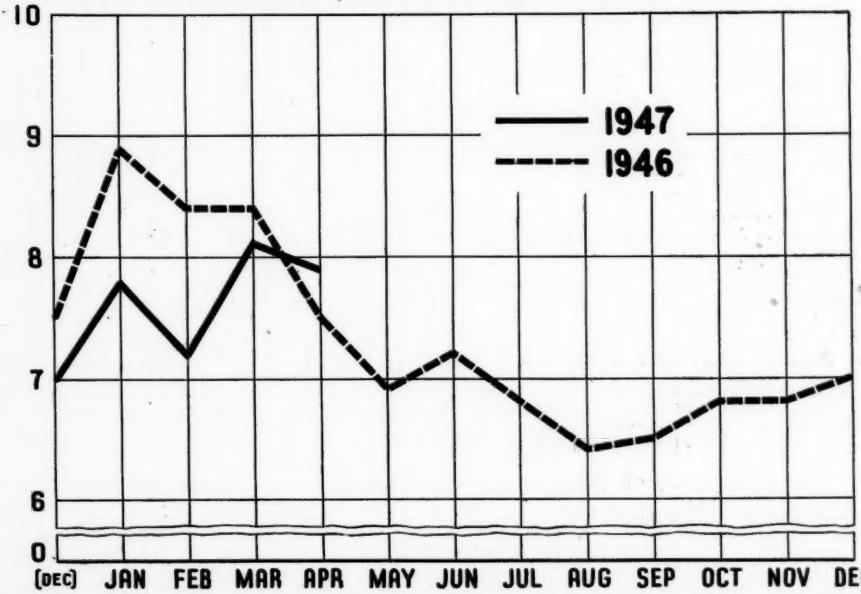
MORTALITY FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT, WEEKLY PREMIUM-PAYING BUSINESS

DEATH RATES PER 1,000 · ANNUAL BASIS (*1946 and 1947 figures are provisional*)



	(DEC)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1946		8.9	8.4	8.4	7.5	6.9	7.2	6.8	6.4	6.5	6.8	6.8	7.0
1947		7.8	7.2	8.1	7.9								

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